SIEL ENERGY

Energy systems

Solar inverters
Uninterruptible Power Systems

The Mission

Energy and Safety

This is our mission in SIEL, a leader manufacturer of:

- Solar and wind inverters
- Uninterruptible Power Systems (UPS)
- Emergency Supply Systems

We are professionals working to maximize the production of your renewable energy installations,

and to guarantee the safe and continuous supply of energy to your critical loads.

30 years of success

- 1983 SIEL is founded with the patronage of Mr. Enrico Pensini, main shareholder and actual President, with the final purpose to design and produce power electronic equipment.
- 1990 SIEL opens the headquarter offices in Trezzano Rosa, Milano (Italy).
- 1993-95 Facing the telecommunications challenges, SIEL develops the UPS's high-power range and includes microprocessor-based control into the equipment.
- 1997-98 SIEL introduces in all its products the newest technology of the IGBT semiconductors.
- 1999 SIEL introduces UPS's up to 1 MW in a single power module. SIEL acquires SIAC.

30 years of success

- 2000 The company enters into the world of the renewable energy, developing the solar inverters range, up to 500 kW.
- 2005 SIEL starts to produce a new range of three-phase inverters for PV installations.
- 2007 The company starts the production of a new range of equipment for the wind industry.
- 2008 SIEL supplies for the PV Spanish market, more than 100 MW of solar inverters.
- 2009 Soleil PS1000: it is produced our 1st Power Station with Plug & Play system. Sales reach 200 MW with this product.

Luzentia, Murcia , Spagna, , 22 MW

30 years of success

- 2010 SIEL creates fuel-cell micro-cogeneration battery and a solar-wind hybrid product.
- 2011 SIEL's headquarter in Trezzano Rosa is doubled in size, being conceived according to the most advanced logistic and organizational criteria of the production system.
- 2011 SUNSIEL: the new solar inverter for the American market.
- 2012 Start-up of the new SIEL subsidiary in New Jersey, USA with its own production line.
- 2013 It is created the Spanish subsidiary. The new born SIEL Energy will offer services and products to Latin America and Spanish markets.

Expansion: 1,7 GW installed

- SIEL offers a wide range of equipment: Power Stations, Soleil HV TL, Sunsiel and launches the range of string and tri-phases inverters to cover all the PV market requirements.
- Following its expansion and growing policy and through the creation of the USA plant and Spanish subsidiary, SIEL is developing markets worldwide : South Africa, Romania, India, US, Australia.
- SIEL goes on and on and installs solar inverters for different PV plants , as Guidonia Plant (32 MWp) or Imelda Project in Chile (36 MW) , exceeding 1,7 GW as installed capacity.

Installed base: 1,7 GW

Country	Installed kW	Country	Installed kW
Italy	1.588.740	Singapore	211
Spain	98.790	Taiwan	500
Chile	**36.000**	Luxembourg	592
Romania	13.290	Holland	122
Thailand	500	Austria	17
Serbia	2.000	India	22
England	643	Swiss	280
France	1.454	Slovakia	50
Germany	2.533	USA	2.250
Hungary	611	Denmark	2
Greece	50	Estonia	62
Tunisia	150	Malaysia	125
Belgium	1.405	Egypt	120
		Sweden	60

Our business

UPS

RENEWABLE ENERGY

PHOTOVOLTAIC
WIND
FUEL CELLS

SERVICE AND MAINTENANCE

UPS

Green Point:
- 1-phase: 1, 2, 3, 6 & 10 kVA
- 3/1-phase: 10, 15 & 20 kVA

Safepower Evo HF: from 20 to 120 kVA
- High efficiency w/o transformer: up to 96,5%
- P.F.: 0,9

Safepower Evo: from 20 to 1000 kVA
- Transformer on board
- Parallel configuration up to 8 MVA
- Optical fiber connection

Data centers solutions

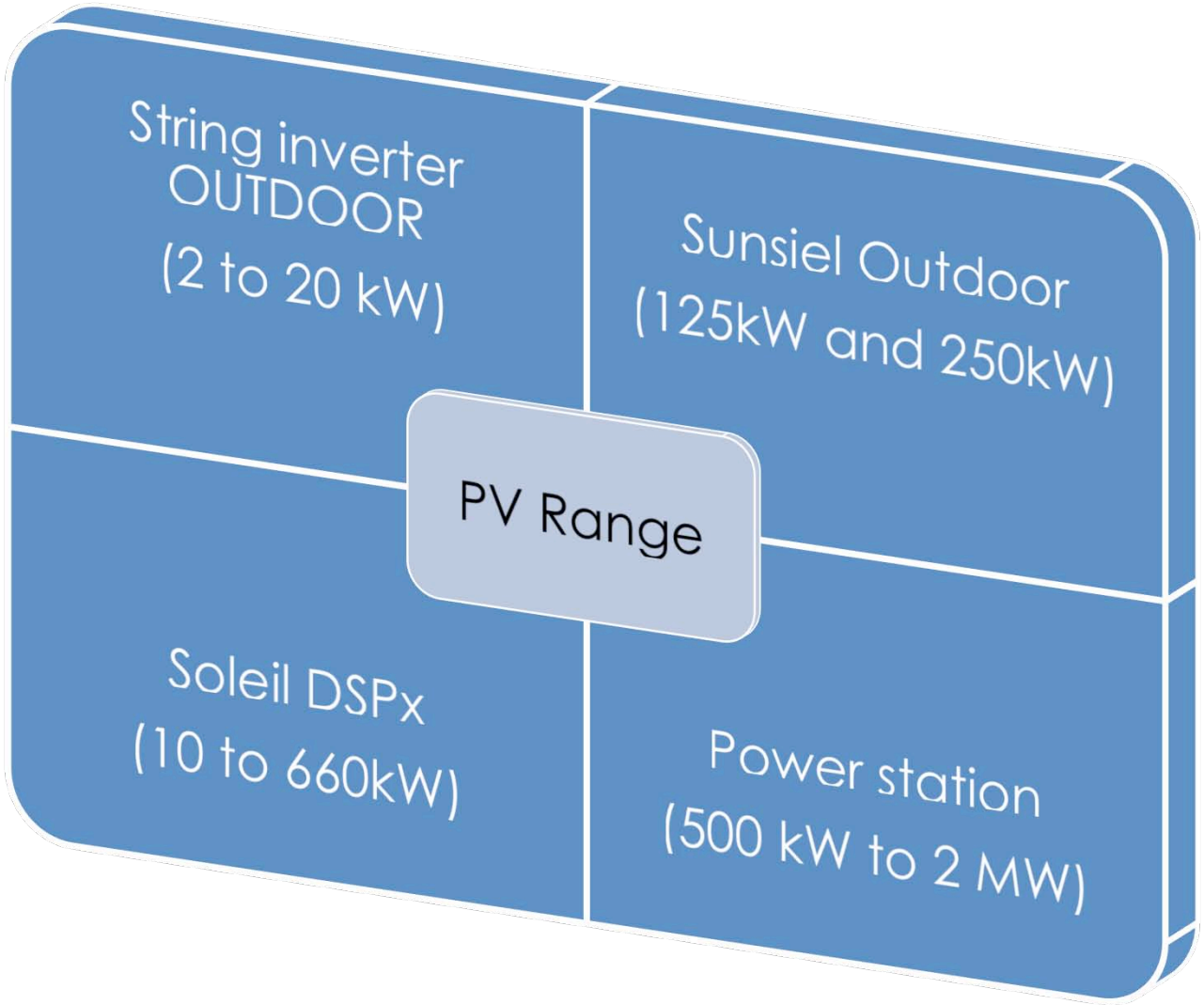
D-Cell

- Modular and scalable design UPS
- Rack format
- Up to 8 modules,15 kVA each, per cabinet
- Distribution panels in single or tri-phase

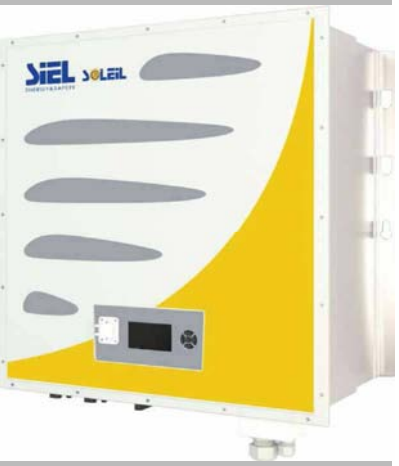
Static switch

- Single phase: 16 Amp and 32 Amp
- Three phase: from 63 Amp to 1600 Amp

PV products range


String inverter OUTDOOR (2 to 20 kW)
Sunsiel Outdoor (125kW and 250kW)
PV Range
Soleil DSPx (10 to 660kW)
Power station (500 kW to 2 MW)

String inverters

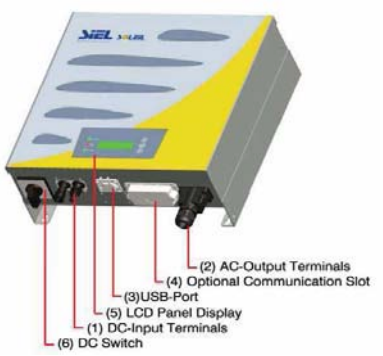


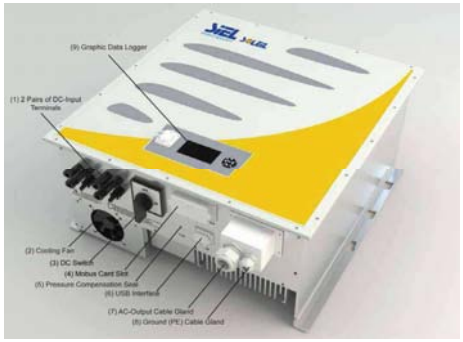
Type	# Phases	Nominal Power	Max Power	Vdc Range	Max DC	MPPT	IP Protection
2000 TL	1	2.000 W	2.200 W	100/550	11 A	1	IP 43
3000 TL	1	3.000 W	3.300 W	100/500	17,5 A	1	IP 65
4000 TL	1	4.000 W	4.400 W	100/500	20 A	1	IP 65
6000 TL	1	6.000 W	6.600 W	100/500	2x20 A	2	IP 65 (fan IP55)
10000 TL	3	10.000 W	10.000 W	250/1000	2x16 A	2	IP 65 (fan IP55)
20000 TL	3	20.000 W	22.200 W	250/1000	2x30 A	2	IP 65
30000 TL	3	30.000 W	33.300 W	250/1000	2x45 A	2	IP 65

Note: TL: transformer-less

String inverters

Model	Dimensions
2000 TL	355x365x151 mm
3000 TL	427x451x164 mm
4000 TL	
6000 TL	434x597x215 mm
10000 TL	548x565x270 mm
20000 TL	773x409x718 mm
30000 TL	





DC breaker included in all models

Soleil DSPx Inverters: models

Model	Output transformer	Power Vdc
TRL	YES	330 - 780
TRH	YES	460 - 1000
TRW	YES	330 - 1000
TLH-280	NO	460 - 1000
TLH-330	NO	500 – 1000
TLH-380	NO	560 - 1000
TLW	NO	330 – 1000

Note: TR: transformer // TL: transformer-less
L: Low DC range // H: high DC range // W: wide DC range

Soleil DSPx inverters: available powers

Mod.	Power in KW – 3-phase (AC)				
TRL	10-15-20 25-30	45-55	80-100-110	220-250	
TRH			80-110	220-250	
TRW			80-110	220-250	
TLH-280			90-110	220-250-330	440-500-660
TLH-330				330-380-400-416	660-760-800-833
TLH-380				330-380-400-416	660-760-800-833
TLW			90-100-110	220-250	440-500

Soleil DSPx inverters: Master/slave configurations

- Some models can be configured in master/slave model
- 2 power modules (one master and one slave)
- 50% of total power on each power module
- Single DC input (1 MPPT) required
- Single AC output required

Mod.	Power in KW – 3-phase (AC)					
TLH-280	440 (2x220)	500 (2x250)	660 (2x330)			
TLH-330			660 (2x330)	760 (2x380)	800 (2x400)	833 (2x416)
TLH-380			660 (2x330)	760 (2x380)	800 (2x400)	833 (2x416)
TLW	440 (2x220)	500 (2x250)				

Sunsiel (UL)

- Available in 125kW and 250kW
- Outdoor installation
- IP-54 / NEMA 3-R
- Output transformer on board
- Output: 208 or 480 Vac
- Power range input 330 – 600 Vdc
- High reliability
- Easy maintenance on site
- RS-485 on board
- Remote monitoring
- Made in USA
- UL certified

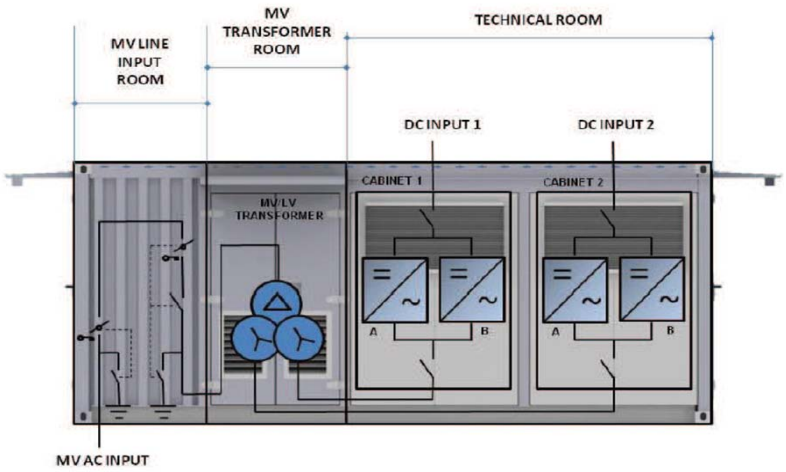
Power Station

- Easy to install: plug & play
- Direct connection to Medium Voltage grid
- Full cabinet monitoring
- Easy maintenance on site
- Standard dimensions for sea transport

Models available:

- OPEN ARCHITECTURE
  - Standard environmental conditions
  - Forced air ventilation
- CLOSED ARCHITECTURE
  - Severe environmental conditions
  - Hermetically sealed technical rooms
  - Cooler/heater unit included
  - Cold version: up to -40°C
  - Hot version: up to +60°C

Power Station



The main components are:

- Solar inverters TLH
- Medium voltage transformer, cells and panel
- Low voltage auxiliary services panel
- TGS2 monitoring system

Optional equipment:

- Meteo station
- Transformer for auxiliary services
- Anti seismic
- Dust filters for desert environments

Power Station: available powers-1

Model	Power (kW AC)	Inverters	MPPT std / M-S*	Size (container)
PS 500	500	1 x 500	- / 1	20 feet HC
PS 660	660	1 x 660	2 / 1	20 feet HC
PS 760	760	1 x 760	2 / 1	20 feet HC
PS 833	833	1 x 833	2 / 1	20 feet HC
PS 990	990	1x660 + 1x330	3 / -	40 feet HC
PS 1200	1.200	6 x 200	6 / -	40 feet HC
PS 1320	1.320	2 x 660	4 / 2	40 feet HC
PS 1520	1.520	2 x 760	4 / 2	40 feet HC
PS 1666	1.666	2 x 833	4 / 2	40 feet HC

* M-S: Master/Slave configuration

Power Station: available powers-2

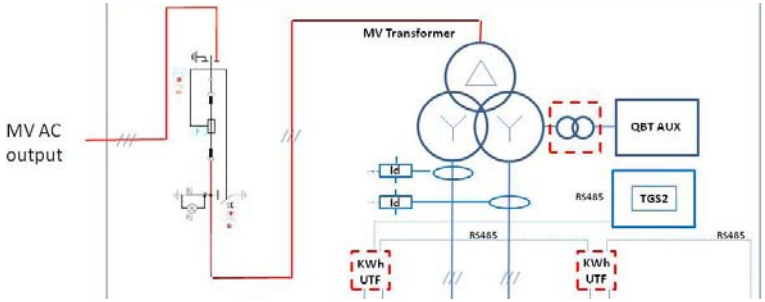
Model	Power (kW AC)	Inverters	MPPT std / M-S*	Size (container)
PS 1980	1.980	3 x 660	6 / 3	40 feet HC
PS 2280	2.280	3 x 760	6 / 3	40 feet HC
PS 2500	2.499	3 x 833	6 / 3	40 feet HC
PS 3000	3.040	4 x 760	8 / 4	40 feet HC
PS 3300	3.330	4 x 833	8 / 4	40 feet HC

* M-S: Master/Slave configuration

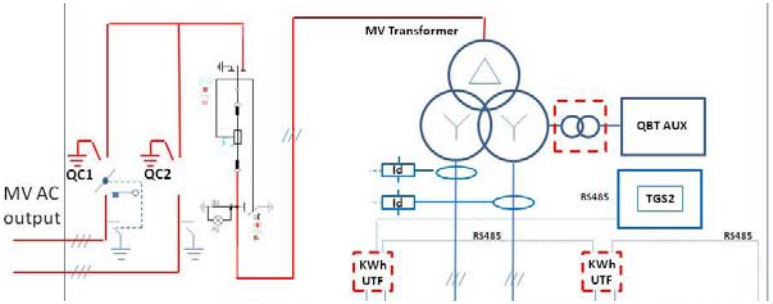
Power Station: configurations-1

Available configurations for the medium voltage board

Standard with fuse and MV switch.



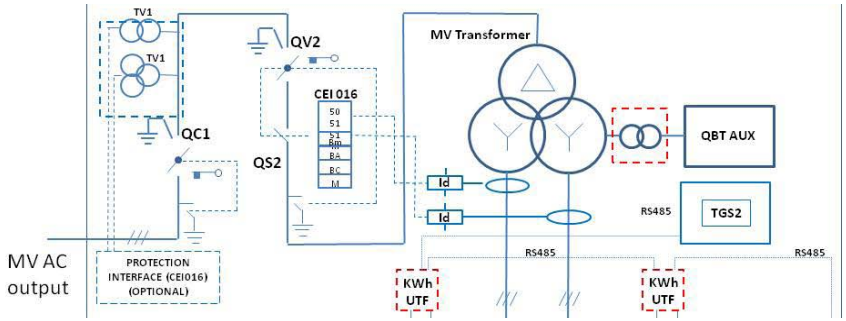
Standard with fuse and MV switch and input-output option.



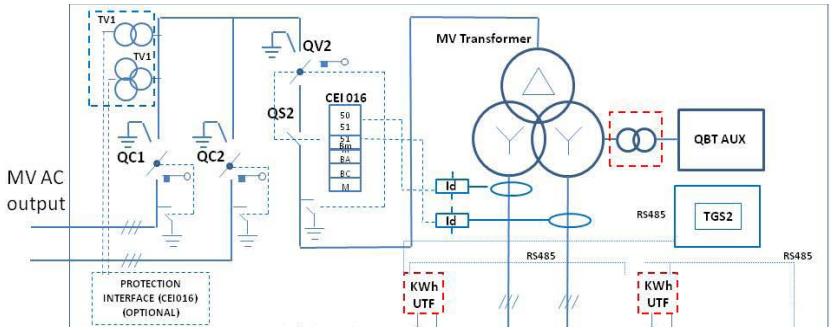
Power Station: configurations-2

Available configurations for the medium voltage board

Version with motor driven MV switch, rotary disconnecting switch and optional protection interface.

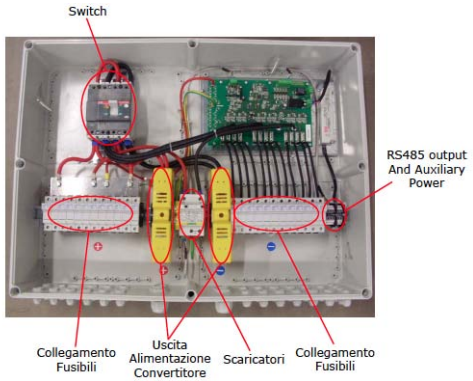


Version with motor driven MV switch, rotary disconnecting switch and optional protection interface and input-output option.



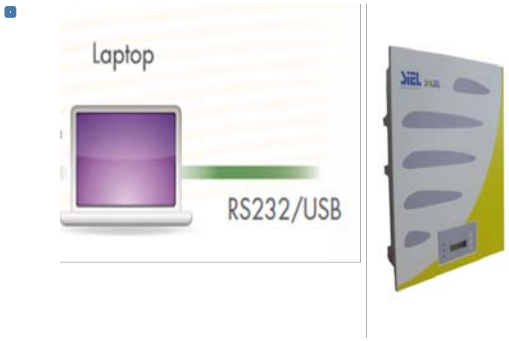
String box: PV String Box-12

Strings connecting box with electronic failure control.



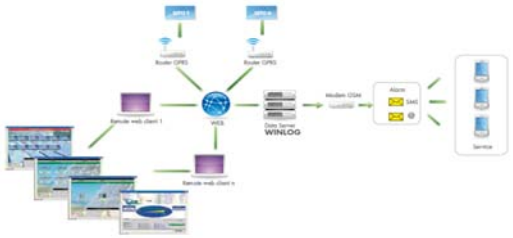
- Up to12 strings of 10A / 1000 VDC each, with replaceable fuses protection.
- Fuses in positive and negative poles.
- General disconnecting switch.
- Monitors the voltage, current and status of each string and fuse.
- Monitors the output switch and lightning dischargers status, as well as the deviation of standard parameters in every string.
- Insulating voltage: 1000 V.
- Protection IP 44.
- RS-485: up to 500 meters without repeaters.
- MODBUS available for third party integration.

Monitoring Systems

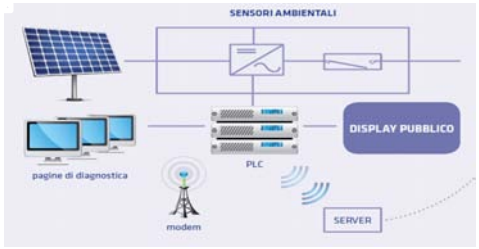


Point to point

Soleil Log 1000

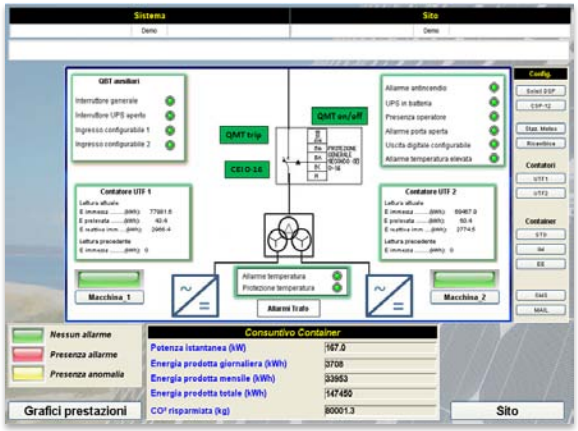


TGS2- remote monitoring

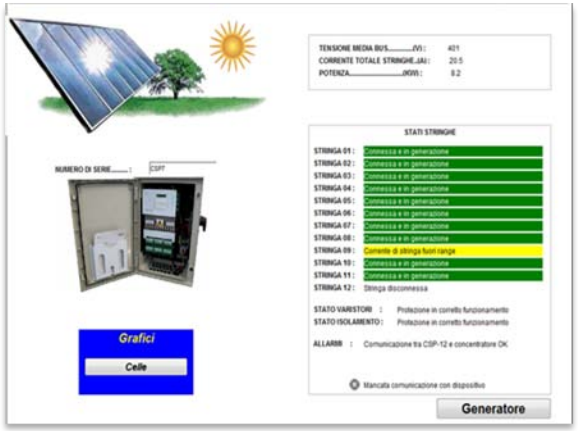


Ecomos – SCADA remote monitoring

TGS-2: Tele Global Service 2



The TGS2 system can monitor the cabin and various technical parameters of the inverter.



Also TGS2 can check the strings status with PV String Box-12 installed and can send alarms for different production level.

Quality and certificates

CEI Certificate

Factory inspection

Quality Management

UL Certificate

ITALCERT
CERTIFICATO N° 005SGQ02
Sistema di Gestione per la Qualità
SIEL S.p.A.
UNI EN ISO 9001:2008 (ISO 9001:2008)
Progettazione, produzione, commercializzazione, messa in servizio ed assistenza tecnica di gruppi statici di continuità (UPS), di inverter e sistemi di supervisione per la gestione delle energie rinnovabili
Design, manufacturing, trading, operating and technical assistance of uninterruptible power supply (UPS), inverter and supervision systems for renewable energy management.
ACCREDIA

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